Stridulatory Mechanism in the Family Schizodactylidae

(Orth. Gryllacridoidea)

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In the small family of *Schizodactylidae,* with only two recognized genera *Schizodactylus* and *Comicus,* an interesting variation was found in the method of stridulation, not only between the adults of different species but also between the adults and nymphs of the same species. Adults and nymphs of *Schizodactylus monstrosus* (Drury 1773) were studied, adults only of *S. burmanus* Uvarov 1943, and adults and nymphs of *S. inexpectatus* (Werner 1901). Two other known species, *S. minor* Ander 1938 and *S. tuberculatus* Ander 1938, were not available and in their original descriptions the stridulatory mechanism is not mentioned. Adults only of two species of *Comicus* were studied, *C. capensis* Brunner 1888, and *C. arenarius* Ramme 1931.

In the nymphs of *S. monstrosus* of probably the last, or the penultimate, instar there are four rows of serrations on the lateral regions of the second, third, fourth and fifth abdominal tergites in the form of small tubercles (Fig. 1). This is obviously a stridulatory mechanism, the sound being produced by rubbing the hind femur against the protuberances. At the broadest diameter of the femur, on the internal side along and near the upper margin, there is a strong ridge which may be used for this purpose. On each abdominal segment the row of serration slopes anteriorly towards the head. The serration is more strongly pronounced at the centre of each row. Ander (1939) and Kevan (1954) stated that these rows are present only on the second and third abdominal segments. However, although the first two rows are more strongly developed, there are also a shortened and less developed third row on the fourth segment and fourth on the fifth segment.

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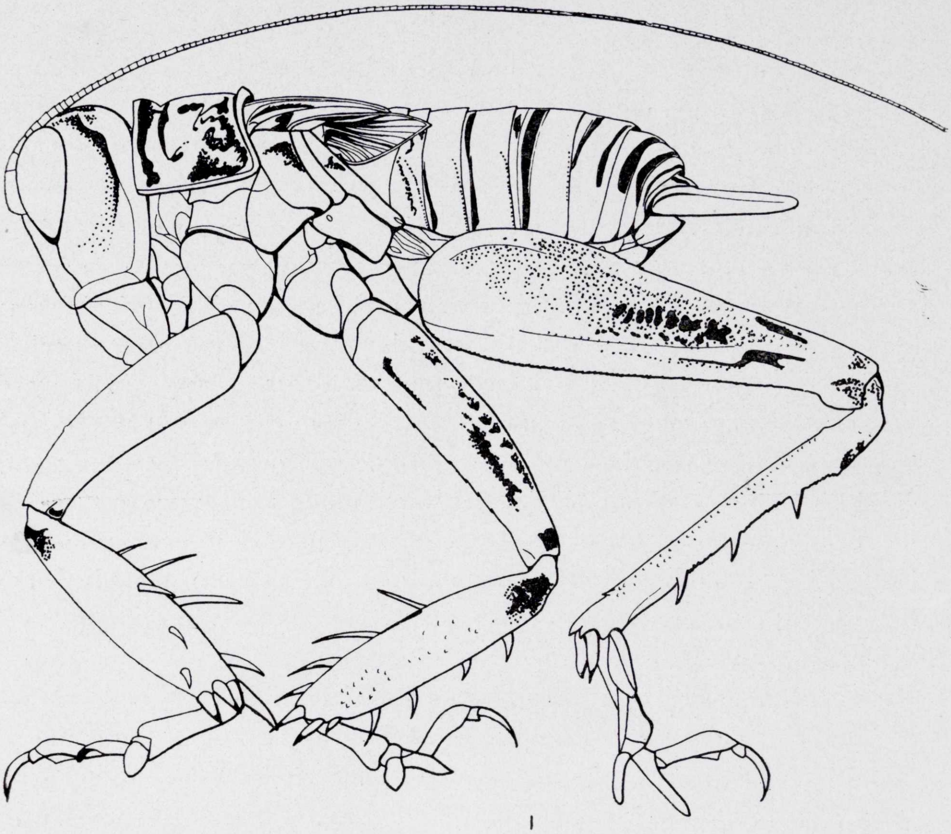
The first row contains twenty-two tubercles (Fig. 2), the second twenty, the third eighteen, the fourth eleven.

Ander and Kevan also stated that the tubercles are less developed in the adult. In sixteen adult specimens of both sexes examined by me only very slight traces of tubercles were found making them unsui-



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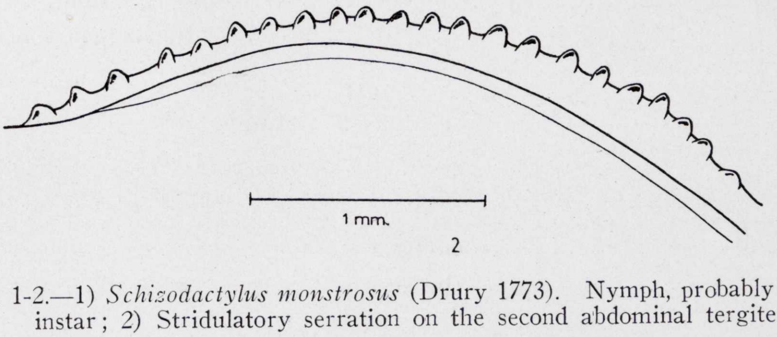

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Figs. 1-2.—1) *Schizodactylus monstrosus* (Drury 1773). Nymph, probably the last instar; 2) Stridulatory serration on the second abdominal tergite.

table for use in stridulation. The ridge on the internal side of the hind femur still remains strongly developed in adults. It is thought probable that stridulation occurs in the adult by rubbing the femoral ridge against the strong main veins of the elytra which are folded concertina-like, with the veins forming sharp ridges.

In the adults of *S. burmanus* Uv. no traces of tubercles are found on the abdomen but a ridge on the internal side of the hind femur is present. It may be presumed that the elytro-femoral mechanism is used in this macropterous species as in the adults of *S. monstrosus*. Unfortunately, no nymphs of this species were available for studiy.

In *S. inexpectatus* (Werner) which is brachypterous (Uvarov 1952) abdominal tubercles are present in both adults and nymphs. They are more numerous than in *S. monstrosus*. On the specimens examined, of probably the penultimate nymphal instar, a range of twenty-seven to sixteen tubercles were found on the second to the fifth abdominal segments respectively. In what is probably the last nymphal instar a range of twenty-eight to eighteen tubercles were found. The adult possesed a range of twenty-nine to twenty from the second to the fifth abdominal segments respectively. A ridge on the internal side of the hind femur is strongly developed in both adults and nymphs.

From these observations it appears that in the macropterous species of *Schizodactylus* the abdomino-femoral mechanism of nymphs changes into an elytro-femoral mechanism of adults, while in the brachypterous species it is retained in the adult.

The genus *Comicus* is apterous. Only one adult specimen of *C. capensis* Brunner 1888 was available for study. The abdomino-femoral stridulatory mechanism is present, but differs from that of *Schizodactylus*. The tubercles on the second segment, although in the same position, are smaller and more dense. There are forty-two tubercles present on the posterior region of the second segment and anterior to this row on the same segment, there are four larger tubercles in a zigzag pattern. On the third, fourth, fifth and sixth segments are eleven, eight, six and five tubercles respectively, forming rows sloping anteriorly; they are larger and less densely arranged than on the second segment. A hair projects from each tubercle. A ridge is present on the internal side of the hind femur.

Adult specimens of *C. arenarius* Ramme possess two rows of small densely arranged tubercles on the second and third abdominal segments.

On the second are forty-two tubercles, on the third forty. Less dense and larger tubercles are found on the other segments. Ramme (1931) in the original description does not mention the stridulatory mechanism. No nymphs were available for study.

It will be seen that a replacement of the abdominal part of the nymphal stridulatory mechanism occurs only in the macropterous *Schizodactylidae,* where it is replaced by an analogos elytral part, whereas in those remaining apterous, or brachypterous, in the adult stage the nymphal condition remains unchanged.

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